

Notice of Allowability

Application No.

10/669,749

Examiner

Merilyn P. Nguyen

Applicant(s)

CHEN ET AL.

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2163

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed June 23, 2006 and the interviews on August 1, 2006 & August 24-25, 2006.

2. ☒ The allowed claim(s) is/are 1, 5-14, 18-27 and 31-39 and now renumbered as 1-30.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____


DON WONG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

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DETAILED ACTION

1. In response to the communication dated June 23, 2006, August 1, 2006 and August 24-25, 2006, claims 1, 5-14, 18-27 and 31-39 are active in this application as the result of the cancellation of claims 2-4, 15-17 and 28-30 and in the condition for allowance.

Examiner's Amendment

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. George H. Gates, Reg. No. 33,500 on 08/1/06, 08/24/06 and 08/25/06.

The application has been amended as follows:

IN THE SPECIFICATION

Please amend the paragraph on page 6, line 1 as follows:

Generally, each of the components, modules, and submodules of the RDBMS comprises instructions and/or data, and are embodied in or retrievable from a computer-readable device, or medium, ~~or carrier~~, e.g., a memory, a data storage device, a remote device coupled to the server computer 100 by a data communications device, etc. Moreover, these instructions and/or data, when read, executed, and/or interpreted by the server computer 100, cause the server computer 100 to perform the steps necessary to implement and/or use the present invention.

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Please amend the paragraph on page 6, line 8 as follows:

Thus, the present invention may be implemented as a method, apparatus, or article of manufacture using standard programming and/or engineering techniques to produce software, firmware, hardware, or any combination thereof. The term “article of manufacture”, ~~or alternatively, “computer program carrier”~~, as used herein is intended to encompass a computer program accessible from any computer-readable device, ~~carrier~~, or media.

IN THE CLAIMS

Please cancel claims 2-4, 15-17 and 28-30, and amend claims 1, 8, 14, 21, 27 and 34 as follows:

1. (CURRENTLY AMENDED) A method of optimizing a query in a computer system, the query being performed by the computer system to retrieve data from a database stored on the computer system, the method comprising:

(a) combining join predicates from a query with local predicates from each branch of one or more UNION ALL views referenced by the query, wherein the query joins two or more of the UNION ALL views, each UNION ALL view contains a UNION ALL of one base table with a local predicate specifying a data range in the base table, and the join predicates are on columns of the UNION ALL views that correspond to the local predicates;

(b) analyzing the combined predicates; and

(c) generating ~~[[the]]~~ a join, except when the analyzing step indicates that the combined predicates are always FALSE and the join generates an empty result.

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2. (CANCELED)

3. (CANCELED)

4. (CANCELED)

5. (ORIGINAL) The method of claim 1, wherein a select-list of the query does not contain aggregate functions, a DISTINCT modifier, or a GROUP BY clause.

6. (ORIGINAL) The method of claim 1, wherein a select-list of the query contains a DISTINCT modifier, but does not contain aggregate functions or a GROUP BY clause.

7. (ORIGINAL) The method of claim 6, further comprising creating a new query block that includes a DISTINCT modifier with the select-list as a parent query block.

8. (CURRENTLY AMENDED) The method of claim 1, wherein a select-list of the query contains one or more aggregate functions [[and/]] or a GROUP BY clause.

9. (PREVIOUSLY PRESENTED) The method of claim 8, further comprising creating a regrouping query block with a regrouping select-list and the GROUP BY clause, and another select-list used for distribution.

10. (PREVIOUSLY PRESENTED) The method of claim 1, wherein pruning logic determines whether the combined predicates are contradictory.

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11. (ORIGINAL) The method of claim 10, wherein the combined predicates are contradictory if the predicates always evaluate to FALSE.

12. (ORIGINAL) The method of claim 11, wherein no join is generated if the combined predicates are contradictory.

13. (ORIGINAL) The method of claim 11, wherein the join is generated if the combined predicates are not contradictory.

14. (CURRENTLY AMENDED) A computer-implemented apparatus for optimizing a query, comprising:

(a) a computer system;

(b) [[logic]] means, performed by the computer system, for:

(1) combining join predicates from a query with local predicates from each branch of one or more UNION ALL views referenced by the query, wherein the query joins two or more of the UNION ALL views, each UNION ALL view contains a UNION ALL of one base table with a local predicate specifying a data range in the base table, and the join predicates are on columns of the UNION ALL views that correspond to the local predicates;

(2) analyzing the combined predicates; and

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(3) generating [[the]] a join, except when the analyzing step indicates that the combined predicates are always FALSE and the join generates an empty result.

15. (CANCELED)

16. (CANCELED)

17. (CANCELED)

18. (ORIGINAL) The apparatus of claim 14, wherein a select-list of the query does not contain aggregate functions, a DISTINCT modifier, or a GROUP BY clause.

19. (ORIGINAL) The apparatus of claim 14, wherein a select-list of the query contains a DISTINCT modifier, but does not contain aggregate functions or a GROUP BY clause.

20. (ORIGINAL) The apparatus of claim 19, further comprising logic for creating a new query block that includes a DISTINCT modifier with the select-list as a parent query block.

21. (CURRENTLY AMENDED) The apparatus of claim 14, wherein a select-list of the query contains one or more aggregate functions [[and/]] or a GROUP BY clause.

22. (ORIGINAL) The apparatus of claim 21, further comprising logic for creating a regrouping query block with a regrouping select-list and the GROUP BY clause, and another select-list used for distribution.

23. (PREVIOUSLY PRESENTED) The apparatus of claim 14, wherein pruning logic determines whether the combined predicates are contradictory.

24. (ORIGINAL) The apparatus of claim 23, wherein the combined predicates are contradictory if the predicates always evaluate to FALSE.

25. (ORIGINAL) The apparatus of claim 24, wherein no join is generated if the combined predicates are contradictory.

26. (ORIGINAL) The apparatus of claim 24, wherein the join is generated if the combined predicates are not contradictory.

27. (CURRENTLY AMENDED) An article of manufacture comprising a computer-readable storage media embodying instructions that, when read and executed by a computer system, results in the computer system performing a method for optimizing a query, the query being performed by the computer system to retrieve data from a database stored in a data storage device coupled to the computer system, the method comprising:

(a) combining join predicates from a query with local predicates from each branch of one or more UNION ALL views referenced by the query, wherein the query joins two or more of the UNION ALL views, each UNION ALL view contains a UNION ALL of one base table with a

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local predicate specifying a data range in the base table, and the join predicates are on columns of the UNION ALL views that correspond to the local predicates;

(b) analyzing the combined predicates; and

(c) generating [[the]] a join, except when the analyzing step indicates that the combined predicates are always FALSE and the join generates an empty result.

28. (CANCELED)

29. (CANCELED)

30. (CANCELED)

31. (ORIGINAL) The article of claim 27, wherein a select-list of the query does not contain aggregate functions, a DISTINCT modifier, or a GROUP BY clause.

32. (ORIGINAL) The article of claim 27, wherein a select-list of the query contains a DISTINCT modifier, but does not contain aggregate functions or a GROUP BY clause.

33. (ORIGINAL) The article of claim 32, further comprising creating a new query block that includes a DISTINCT modifier with the select-list as a parent query block.

34. (CURRENTLY AMENDED) The article of claim 27, wherein a select-list of the query contains one or more aggregate functions [[and/]] or a GROUP BY clause.

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35. (ORIGINAL) The article of claim 34, further comprising creating a regrouping query block with a regrouping select-list and the GROUP BY clause, and another select-list used for distribution.

36. (PREVIOUSLY PRESENTED) The article of claim 27, wherein pruning logic determines whether the combined predicates are contradictory.

37. (ORIGINAL) The article of claim 36, wherein the combined predicates are contradictory if the predicates always evaluate to FALSE.

38. (ORIGINAL) The article of claim 37, wherein no join is generated if the combined predicates are contradictory.

39. (ORIGINAL) The article of claim 39, wherein the join is generated if the combined predicates are not contradictory.

Allowable subject matter

3. The following is an examiner's statement of reason for allowance:

None of the references of record Cheng (US Patent No. 5,963,933) and Jou (US Patent No. 5,822,750) teaches or suggests the claimed (Claims 1, 14 and 27) invention having, in addition to the other limitations in the claims, the limitation of analyzing the combined predicates and generating a join, except when the analyzing step indicates that the combined predicates are always FALSE and the join generates an empty result.

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4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Conclusion

5. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lawande U.S Patent No. 6,882,993 discloses incremental refresh or materialized views with joins and aggregates after arbitrary dml operations to multiple tables.

Cochrane U.S Patent No. 6,339,769 discloses query optimization by transparently altering properties of relational tables using materialized views.

Luo U.S Patent No. 6,990,503 discloses rescheduling transactions in a database system.

Shan U.S Patent No. 5,276,870 discloses view composition in a data base management system.

Bello U.S Patent No. 6,496,819 discloses rewriting a query in terms of a summary based on functional dependencies and join backs, and based on join derivability.

Slutz U.S 2003/0191774 discloses test generator for database management systems providing tight joins.

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Yagoub U.S 2005/0120001 discloses sql structure analyzer.

Zhang U.S 2004/0122804 discloses materialized view signature and efficient identification of materialized view candidates for queries.

Rada Chirkova, Alon Y. Halevy and Dan Suciu disclose, "A formal perspective on the view selection problem", 2002.

Hamid Pirahesh, Joseph M. Hellerstein and Waquar Hasan disclose, "Extensible/Rule Based Query Rewrite Optimization in Starburst", 1992.

Oracle7 Tuning, release 7.3.3, "Managing Partition Views", copy right 1997.

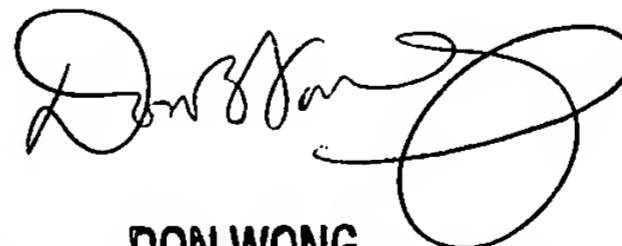
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marilyn P Nguyen whose telephone number is 571-272-4026. The examiner can normally be reached on M-F: 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and 703-746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

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August 30, 2006



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SUPERVISORY PATENT EXAMINER
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